

Subject: MATERIALS SCIENCE COLLOQUIUM, Jana Zaumseil, Center for Nanoscale Materials and Materials Science Division, Beyond LEDs: Polymer Light-Emitting Field-Effect Transistors", Thursday, March 13, 2008, 11:00 a.m., Building 212, Room A-157, Suzanne te Velthuis
From: Marlene Metz <metz@anl.gov>
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MATERIALS SCIENCE COLLOQUIUM

SPEAKER: Jana Zaumseil
Center for Nanoscale Materials and
Materials Science Division

TITLE: "Beyond LEDs: Polymer Light-Emitting Field-Effect Transistors"

DATE: Thursday, March 13, 2008

TIME: 11:00 a.m.

PLACE: Building 212, Room A-157

HOST: Suzanne te Velthuis

Refreshments will be available at 10:45 a.m

Abstract:

Since the discovery of their electroluminescent properties, conjugated polymers have been extensively investigated as active materials in light-emitting diodes (LEDs). They can also serve as the semiconducting layer in organic field-effect transistors (FETs) where they show good charge transport characteristics. Ambipolar light-emitting field-effect transistors combine the emission properties of polymer LEDs with the switching behavior of FETs in a planar structure. Light emission due to the recombination of holes and electrons can be directly observed within the transistor channel. The position of the narrow emission zone is controlled by the applied voltages and can be varied throughout the entire channel. This vividly visualizes simultaneous hole and electron accumulation in ambipolar FETs and could enable novel integrated electro-optical devices. This presentation will introduce the prerequisites to achieve ambipolar transport and light emission in polymer field-effect transistors and show how they can be used to study charge transport and recombination in conjugated polymers.

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